

PLEASE ENTER
3/30/04

This listing of claims will replace all prior versions and listings of claims in the applications.

LISTING OF CLAIMS

1. (Previously presented) A method of fabricating a bioelectronic component, the method comprising the steps of:
- providing a batch of nanoparticles having submicron sizes and an electrical characteristic;
 - attaching at least one biological material to the nanoparticles so as to form shells of the biological material therearound, wherein the biological material is selected from the group consisting of proteins, polypeptides, nucleic acids, polysaccharides, carbohydrates, enzyme substrates, antigens, antibodies, pharmaceuticals, and combinations thereof;
 - depositing onto a surface the nanoparticles coated with shells attached thereto; and
 - causing the deposited nanoparticles to be in electrical communication with at least one electrical contact to facilitate an electrical measurement thereof, the electrical measurement being affected by the biological material.
2. (Previously presented) The method of claim 1 in which the nanoparticles are caused to be in electrical communication with said electrical contact by self-assembly.
3. (Previously presented) The method of claim 1 in which the nanoparticles are caused to be in electrical communication with said electrical contact by electrostatic assembly.
4. (Original) The method of claim 1 wherein the nanoparticles are semiconductive.
5. (Original) The method of claim 1 wherein the nanoparticles are conductive.
6. (Original) The method of claim 1 wherein the nanoparticles, surrounded by the biological material, collectively act as an insulator.

7. (Previously presented) The method of claim 1 wherein the component is a transistor comprising a source element and a drain element and a semiconductor layer disposed between the source and the drain elements, and depositing the nanoparticles onto a surface comprises depositing the nanoparticles onto the surface of the semiconductor layer.
8. (Original) The method of claim 1 repeated at a plurality of locations on a substrate to form an array of bioelectronic components.
9. (Previously presented) A method for fabricating a bioelectronic component, the method comprising the steps of:
- a. providing a first batch of nanoparticles having submicron sizes and a first electrical characteristic;
 - b. depositing the first batch of nanoparticles onto a surface;
 - c. sintering the first batch of nanoparticles to form a continuous, uniform layer exhibiting the electrical characteristic of the first batch of nanoparticles, the layer having a surface;
 - d. providing a second batch of nanoparticles having submicron sizes and a second electrical characteristic;
 - e. attaching at least one biological material to the second batch of nanoparticles so as to form shells of the shells of the biological material therearound;
 - f. depositing the second batch of nanoparticles onto the layer surface formed by the first batch of nanoparticles;
 - g. causing the deposited second batch of nanoparticles to be in electrical communication with at least one electrical contact to facilitate an electrical measurement thereof, the electrical measurement being affected by the biological material.
10. (Previously presented) A method for fabricating a bioelectronic component, the method comprising the steps of:
- a. providing a first batch of nanoparticles having submicron sizes and a first electrical characteristic;

- b. depositing the first batch of nanoparticles onto a surface;
- c. sintering the first batch of nanoparticles to form a continuous, uniform layer exhibiting the electrical characteristic of the first batch of nanoparticles, the layer having a surface;
- d. providing a second batch of electrically conductive nanoparticles having submicron sizes;
- e. depositing the second-batch nanoparticles in contact with a portion of the layer derived from the first batch of nanoparticles; and
- f. sintering the second-batch of nanoparticles to form an electrical contact,
- g. providing a third batch of nanoparticles having submicron sizes and a second electrical characteristic;
- h. attaching at least one biological material to the third batch of nanoparticles so as to form shells of the shells of the biological material therearound;
- i. depositing the third batch of nanoparticles onto the layer surface formed by the first batch of nanoparticles;
- j. causing the deposited second batch of nanoparticles to be in electrical communication with the electrical contact to facilitate an electrical measurement thereof, the electrical measurement being affected by the biological material.

11. (Previously presented) The method of claim 10 further comprising the steps of repeating steps (a) – (j) at a plurality of locations on a substrate to form an array of bioelectronic components.

12. (Original) The method of claim 1 wherein the biological material comprises at least one nucleic acid.

13. (Original) The method of claim 1 wherein the biological material comprises at least one protein.

Claims 14-31 (Canceled)